

**WasteCap of Massachusetts Site Visit Report:  
MassPort's Logan Airport Facility  
1 Harborside Drive  
East Boston, MA**

Developed by WasteCap of Massachusetts  
for MassPort

Site Visit Conducted on June 16, 2003

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## **INTRODUCTION AND BACKGROUND**

WasteCap of Massachusetts contracted with the State Sustainability Program at the Massachusetts Executive Office of Environmental Affairs and the Department of Environmental Protection to perform a site visit for the following facility:

Massachusetts Port Authority, Logan Airport Facility  
1 Harborside Drive  
East Boston, MA 02128-2909

Contact:  
Jenna Newcombe, Environmental Project Manager  
(617)568-3544

Site visit date:  
June 16, 2003

The purpose of the site visit was to review the MassPort's current waste management practices and identify specific ways to reduce waste, improve environmental performance, and cut costs.

### **Facility Information**

Boston's Logan International Airport is the nation's eighteenth busiest airport and the world's thirty-fourth busiest airport based on passenger volume. The airport boundary encompasses approximately 2,400 acres in East Boston, Massachusetts. New England's largest transportation center, serving more than 23 million passengers, Logan handles over 1 billion pounds of high value cargo and mail, employs over 15,000 workers and stimulates the New England regional economy by approximately \$6 billion per year. It is estimated \$12.8 billion in imports and \$4.5 billion in exports move via Logan annually.

### **General Benefits of Recycling**

Recycling turns materials that would otherwise become waste into valuable resources and generates a host of environmental, financial, and social benefits. Major benefits include:

- **Cost Savings**  
Recycling saves money by diverting materials from the trash, thereby reducing trash collection and disposal fees. The price per ton to divert recyclables like paper, cardboard, and scrap metal is usually less than it is for conventional trash disposal in landfills or incinerators.
- **Comply with Regulations and Executive Orders**  
There are a number of regulations and an executive order relating to waste management procedures with which state agencies should comply:
  - **Waste Bans -**  
"Waste bans" are restrictions on the disposal and transfer for disposal of certain hazardous and recyclable items at solid waste facilities in Massachusetts. Banned materials include paper; cardboard; glass, metal, and plastic containers; leaves and yard waste; batteries; white goods (appliances); whole tires; and cathode ray tubes. For more information visit <http://www.state.ma.us/dep/recycle/files/wstban01.doc>
  - **Massachusetts Universal Waste Rule -**  
Universal Wastes are specific hazardous wastes such as batteries, mercury containing products like thermostats and fluorescent lamps, and other materials that are commonly generated by households, businesses, and industries that are subject to streamlined regulations. Universal Wastes must be stored in a separate area marked as a Universal Waste accumulation area. Containers of universal wastes or individual universal waste items must be labeled as "Universal

Waste”, with the name of the waste, *e.g.*, “Universal Wastes – Thermostats”. Additional handling requirements depend on the type of waste. Disposal of universal wastes as solid waste is prohibited. Generators also are prohibited from accumulating universal wastes for longer than one year, unless the generator can prove that the activity is solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment or disposal by a licensed vendor.

For more information visit <http://www.state.ma.us/dep/recycle/files/univrule.doc>

- State Sustainability Executive Order No.438 -  
Executive Order 438, issued in July of 2002, calls on all state agencies to establish sustainability goals, initiate long-term sustainability planning, and implement sustainable practices at state facilities. The Order establishes a State Sustainability Program, staffed at the Executive Office of Environmental Affairs, which assists agencies in meeting the goals of the Order, including agency plans, environmental initiatives, and tracking and reporting.


With regard to solid waste, the Order calls on agencies to meet the 70% waste reduction goal established by the EOEA/DEP Beyond 2000 Solid Waste Master Plan by 2010. Implementing the recommendations in this report will help MassPort move toward meeting the requirements of Executive Order No. 438.

- **Improve the Environment**

Recycling benefits the environment in a number of ways:

- Conserving Natural Resources -  
By substituting scrap materials for the use of trees, metal ores, and other virgin materials, recycling reduces the need to expand forestry and mining operations.
- Saving Energy -  
Because recycled materials have already been processed once, it takes less energy to process new products with recycled material than virgin materials.
- Reducing Green House Emissions -  
Much of the energy used in industrial processes and in transportation of materials involves burning fossil fuels like gasoline, diesel, and coal, which are sources of greenhouse gas emissions. By saving energy, recycling also reduces the amount of greenhouse gasses being generated by these processes.

Using recycled vs. virgin materials to make new products saves a tremendous amount of energy and dramatically reduces harmful emissions. The following chart illustrates the benefits of using recycled vs. virgin pulp to make new paper:

	60% energy savings (Center for Ecological Technology)	95% less air pollution; each ton saves 60 lbs. of air pollution (Center for Ecological Technology)	Recycling of each ton of paper saves 17 trees and 7000 gallons of water (EPA)
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- **Sustain Local Industries and Jobs**

Information obtained from the Massachusetts Department of Environmental Protection shows that the economic activity generated by the recycling and re-use industry in Massachusetts is significant. Highlights include:

- 1,437 recycling and reuse establishments.
- 19,445 employed in recycling and re-use industries.
- \$557 million in annual payroll.
- \$3.58 billion in annual revenues.

## **CURRENT PROGRAM OVERVIEW**

Only one month's invoices (April 2003) could be obtained from MassPort, except for the Office Center, where WasteCap obtained six months of invoices (November 2002 – April 2003). The April invoices were used to develop the following estimated total annual costs, and all recommendations are based on the assumption that April is a typical month:

<b>Contract</b>	<b>Payment Structure</b>	<b>Annual Contract Cost</b>	<b>Qty Managed (tons)</b>	<b>Avg Cost per Ton</b>
Trash	One Harborside Drive - Office Center		97	\$168
	Hauling and return charge: \$110/pick up (20-yd container, 1x/wk)	\$5,720		
	Disposal charge: \$80/ton	\$7,778		
	Compactor rental: \$210/mo	\$2,820		
	Subtotal:	\$16,318		
	Terminal E - Gate 8		595	\$104
	Hauling and return charge: \$110/pick up (35-yd container, 2xs/wk)	\$11,440		
	Disposal charge: \$80/ton	\$47,600		
	Compactor rental: \$235/mo	\$2,820		
	Subtotal:	\$61,860		
	Terminal E - Gate 6		274	\$185
	Hauling and return charge: \$110/pick up (35-yd container, 2xs/wk)	\$11,440		
	Disposal/incineration charge: \$133/ton	\$36,442		
	Compactor rental: \$235/mo	\$2,820		
	Subtotal:	\$50,702		
	Terminal D		483	\$121
	Hauling and return charge: \$110/pick up (35-yd container, 3xs/wk)	\$17,160		
	Disposal charge: \$80/ton	\$38,640		
	Compactor rental: \$235/mo	\$2,820		
	Subtotal:	\$58,620		
	Open Dump Area		189	\$155
	Hauling and return charge: \$110/pick up (35-yd container, 2xs/wk)	\$11,440		
	Disposal charge: \$80/ton	\$15,120		
	Compactor rental: \$235/mo	\$2,820		
	Subtotal:	\$29,380		
	Open Dump Area A		725	\$104
	Hauling and return charge: \$110/pick up (20-yd container, 3xs/wk)	\$17,160		
	Disposal charge: \$80/ton	\$58,000		
	Compactor rental	-		
	Subtotal:	\$75,160		

	Open Dump Area B		936	\$98	
	Hauling and return charge: \$110/pick up (20-yd container, 3xs/wk)	\$17,160			
	Disposal charge: \$80/ton	\$74,880			
	Compactor rental	-			
	Subtotal:		\$92,040		
	Facilities 1 - Heating Plant		91	\$171	
	Hauling and return charge: \$110/pick up (20-yd container, once/wk)	\$5,720			
	Disposal charge: \$80/ton	\$7,280			
	Compactor rental	\$ 2,520.00			
	Subtotal:				\$15,520
	Facilities 3 - Sign Shop and Woodworking Shop		211	\$148	
	Hauling and return charge: \$110/pick up (35-yd container, 2xs/wk)	\$11,440			
	Disposal charge: \$80/ton	\$16,880			
	Compactor rental: \$235/mo	\$2,820			
	Subtotal:				\$31,140
	Fire Station				
	Monthly rubbish removal (6-yd, once/mo)	\$6,217			
	Disposal charge	-			
	Compactor rental	-			
	Subtotal:				\$6,217
	BU Building				
	Monthly rubbish removal (8-yd, once/mo)	\$2,494			
	Disposal charge	-			
	Compactor rental	-			
	Subtotal:				\$2,494
	58 Harborside Drive - Cargo				
	Monthly rubbish removal (8-yd, once/mo)	\$2,494			
	Disposal charge	-			
	Compactor rental	-			
	Subtotal:				\$2,494
	South Cargo		269	\$144	
Hauling and return charge: \$110/pick up (30-yd container, 3xs/wk)	\$17,160				
Disposal charge: \$80/ton	\$21,520				
Compactor rental	-				
Subtotal:		\$38,680			
North Cargo		166	\$183		
Hauling and return charge: \$110/pick up (30-yd container, 3xs/wk)	\$17,160				
Disposal charge: \$80/ton	\$13,280				
Compactor rental	-				
Subtotal:				\$30,440	
Trash Total:		\$511,064			
White Paper	Office Center: \$170.00 Monthly charge (30-yd container, every 6 weeks)	\$2,040			

Comingled	Terminal E - Gate 8: Recycling container rental (30-yd container, \$60/mo)	\$720		
	Open Dump Area: Recycling container rental (30-yd container, \$60/mo)	\$720		
	South Cargo: Recycling container rental (30-yd container, \$60/mo)	\$720		
Cardboard	Open Dump Area: Hauling and return corrugated compactor box: \$110/pick up (2x42 yd container, once/mo)	\$1,320		
	Compactor rental fee (\$150/mo)	\$1,800		
Bottles and Cans	Monthly pick up (4 bags/month)	\$0		
Electronics/CRT's	Once yearly collection; 18 skids	\$2,800	150 machines/yr	
Totals		\$521,184	3939 tons	

## **SUMMARY OF MAJOR RECOMMENDATIONS**

Based on our research and site visit findings, the following is a list of major opportunities to improve waste management at MassPort:

### Short term-

- Modify existing trash contracts by adjusting containers sizes and frequency of hauls to reduce costs significantly. A portion of these savings should be invested in the recycling program.
- Expand the current paper recycling program from white only to an "Anything That Rips" mixed paper and cardboard recycling program in the Office Center at One Harborside Drive.
- Establish an "Anything That Rips" mixed paper and cardboard recycling program at the Terminals.
- Renegotiate the cardboard recycling contract for the Open Dump Area to take advantage of favorable cardboard recycling markets.
- Establish a comprehensive public education program.

### Long term-

- Establish a sorted office paper recycling program in the Fire Station after performing a waste audit on that building's trash.
- Establish a bottle and can recycling program in the Office Center and Terminals.
- Establish a scrap metal recycling program.

These recommendations are explained in detail on the following pages.



Open Dump Area

L-R: 30yd domed recycling roll-off container; BFI roll-off (most likely a contractor's); 42 yd cardboard compactor; 35 yd trash compactor

## **TRASH DISPOSAL CONTRACT RECOMMENDATIONS**

### **Current Trash Disposal Program:**

After an in depth analysis of MassPort's trash disposal contracts, it was discovered many containers are hauled too frequently and/or are too small. Recommendations are made in the order in which the containers are listed on the current program chart.

### **Specific Recommendations:**

- **Office Center – One Harborside Drive**

Scenario 1: Haul the current compactor less frequently –

There is currently a 20 cy trash compactor located at this facility. This compactor should weigh 3.5 – 5.75 tons when hauled. The compactor weights when hauled range from 1.3 to 2.62 tons, proving that this compactor was pulled too frequently. This compactor should be hauled every two weeks instead of every week, saving \$2,860 annually. (26 weeks x \$110).

Scenario 2: Replace the current 20 cy compactor with a 35 cy compactor –

There is enough room to place a 35 cy sealed trash compactor in the same location. MassPort should direct their vendor to remove the 20 cy trash compactor and replace it with a 35 cy sealed trash compactor. Full 35 cy trash compactors should weigh 6 – 10 tons when hauled. Even though the cost to lease the larger compactor will be \$25 higher, the haul costs for this larger compactor will be reduced by additional 43%.

20 cy trash compactor at the Office Center Loading Dock



	<b>Current 20 cy Trash Compactor</b>	<b>Proposed 35 cy Trash Compactor</b>
Annual Haul Cost	\$5,720	\$1,630
Annual Compactor Rental Cost	\$2,520	\$2,830
Total Annual Cost	\$8,240	\$4,450
Total annual savings by increasing compactor to 35 cy : \$3,790		

The total annual savings resulting from hauling a larger compactor at the proper weight is \$3,790.

- **Terminal E – Gate 8**

A full 35 cy trash compactor should weigh 6 – 10 tons when hauled. Currently, the compactor at Terminal E – Gate 8 is being pulled when the tonnages range from 4.45 – 6.92 tons. It is possible that more money could be saved here by spreading the hauls out a little further.

- **Terminal E – Gate 6**

A full 35 cy trash compactor should weigh 6 – 10 tons when hauled. The compactor weights when hauled for this terminal range from 1.6 to 4.2 tons. MassPort should reduce the pulls from 3x per week to 2x per week. This will save approximately \$5,700 per year.

- **Terminal D**

A full 35 cy trash compactor should weigh 6 – 10 tons when hauled. The compactor weights when hauled for this terminal range from 2.55 to 4.24 tons. MassPort should reduce the pulls from 3x per week to 2x per week. This will save approximately \$5,700 per year.

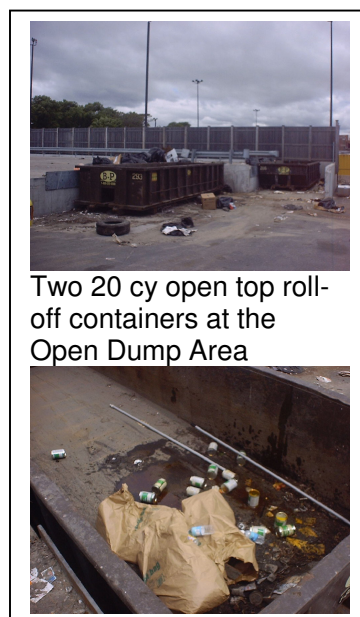


- **Open Dump Area – 35 cy trash compactor**

A full 35 cy trash compactor should weigh 6 – 10 tons when hauled. The compactor weights when hauled from the open dump area range from 1.31 to 2.42 tons. This compactor should be hauled once per week instead of twice, for a total annual savings of \$5,720.

- **Open Dump Area – two 20 cy open top roll-off containers**

Two 20 cy yard open top roll-off containers are currently being hauled 3 times per week. These containers are being hauled too frequently, when weights often range from 1.27 – 5 tons. They should weigh approximately 10 tons when hauled. Both of these containers should be eliminated and replaced with a 30 or 40 cubic yard open top roll-off container which should weigh 10 –15 tons when full. The containers should then be put on an “on call” schedule where MassPort staff call for a haul when the container is full. The total annual savings should be at least \$17,160 (the total annual cost of hauling one of the 20 cy containers).



Two 20 cy open top roll-off containers at the Open Dump Area

- **Facilities 1 (Heating Plant)**

Scenario 1: Haul this compactor less frequently –

There is currently a 20 cy trash compactor located at this facility. This compactor should weigh 3.5 – 5.75 tons when hauled. The compactor weights when hauled range from 1.18 to 2.09 tons, proving that this compactor was pulled too frequently. This compactor should be hauled every two weeks instead of every week, saving \$2,860 annually. (26 weeks x \$110).

Scenario 2: Replace this compactor with a 35 cy compactor if there is enough space –

There is enough room to place a 35 cy sealed trash compactor in the same location. MassPort should direct their vendor to remove the 20 cy trash compactor and replace it with a 35 cy sealed trash compactor. Full 35 cy trash compactors should weigh 6 – 10 tons when hauled. Even though the cost to lease the larger compactor will be \$25 higher, the haul costs for this larger compactor will be reduced by additional 43%.

	<b>Current 20 cy Trash Compactor</b>	<b>Proposed 35 cy Trash Compactor</b>
Annual Haul Cost	\$5,720	\$1,630
Annual Compactor Rental Cost	\$2,520	\$2,830
Total Annual Cost	\$8,240	\$4,450
Total annual savings by increasing compactor to 35 cy: \$3,790		

The total annual savings resulting from hauling a larger compactor at the proper weight is \$3,790.

- **Facilities 3 (Sign Shop & Carpentry Shop)**

A full 35 cy trash compactor should weigh 6 – 10 tons when hauled. The compactor weights when hauled for this facility range from 1.47 to 2.29 tons. MassPort should reduce the pulls from 3 times per week to 1 time per week. This will save \$7,665 annually.

- **Fire Station**

No weights are available for this facility because it is emptied by a front load packer truck during its route to service many other facilities. WasteCap believes that the frequency of service can be reduced here by implementing a mixed paper recycling program at the Fire Station. See the mixed paper recycling section for more details.

- **BU Building**  
No recommendation at this time.
- **58 Harborside Drive (Cargo facility)**  
No recommendation at this time.
- **South Cargo – 30 cy open top roll-off container**  
The container weights when hauled for this facility range from 1 (this is probably BP Trucking's minimum tonnage charge– the container was actually probably empty) to 4.97 tons. This container should contain 5-10 tons when full. WasteCap recommends putting this container on an "on call" schedule where MassPort staff call for a haul when the container is full. This system should decrease the number of hauls required and save \$11,500 annually.
- **North Cargo – 30 cy open top roll-off container**  
The container weights when hauled for this facility range from 1 (this is probably BP Trucking's minimum tonnage charge– the container was actually probably empty) to 1.39 tons. This container should contain 5-10 tons when full. WasteCap recommends putting this container on an "on call" schedule where MassPort staff call for a haul when the container is full. This system should decrease the number of hauls required and save \$11,500 annually.

## **RECYCLING PROGRAM RECOMMENDATIONS**

MassPort can realize approximately \$71,000 in savings by modifying their trash contracts (detailed in the previous section). A portion of these saving should be used to fund the following recommendations to improve the recycling program at MassPort. A very limited amount of recycling is currently occurring at MassPort, mainly in the form of white paper at the Office Center and cardboard at the Open Dump Area.

### **A. Contract with WasteCap or Hire a Recycling Coordinator**

MassPort's recycling program begun a number of years ago was crippled by the elimination of the Recycling Coordinator's position, causing MassPort to incur high waste disposal costs. Trash and recycling programs must be managed on a regular basis to minimize waste disposal expenses and take advantage of fluctuating markets for recyclable materials.

MassPort should contract with WasteCap on an hourly basis through the MA Recycling Solid Waste Technical Assistance Services Contract (DEP RFR #EQE-600), or hire an experienced full or part time Recycling Coordinator to oversee the recycling/solid waste operations at MassPort. The avoided disposal savings MassPort would realize by implementing the trash contract modifications and recycling program recommendations detailed in this report will more than pay for the cost of hiring WasteCap or a Recycling Coordinator.

### **B. Recycling Paper and Cardboard**

- **Terminals E & D**  
Currently, no materials are being recycled at the terminals. These compactors contain significant amounts of newspaper, magazines, and cardboard. WasteCap recommends that MassPort implement an "Anything That Rips" recycling program at Terminals E & D that includes mixed office paper, newspaper, magazines, and cardboard. We obtained a quote from Elizabeth Bedard at the Northeast Resource Recovery Association (NRRA), (603)798-5777, [www.recyclewithus.org](http://www.recyclewithus.org), to place one stationary compactor with a 42 cy roll-off container at each terminal. The potential savings from implementing this program with a conservative 50% recycling rate are detailed below:

Cardboard in the trash compactor at Terminal E – Gate 8



# MassPort Terminals E & D

## Mixed Paper & Cardboard Recycling Cost/Benefit Analysis

### A. Present Trash Disposal Costs without Mixed Paper and Cardboard Recycling

	Estimated Annual Tons of Trash	Present Annual Disposal Cost	Present Annual Trash Compactor Rental Cost	Present Annual Haul Cost	Present Total Annual Cost
Terminal E - Gate 8	595	\$47,600	\$2,820	\$11,440	\$61,860
Terminal D	483	\$38,640	\$2,820	\$17,160	\$58,620
<b>Total:</b>					<b>\$120,480</b>

### B. Costs including Mixed Paper and Cardboard Recycling Program (assuming 50% recycling)

	Estimated Annual Tons of Recyclable Paper & Cardboard	Est. Annual Tons of Trash	Present Annual Disposal Cost	Present Annual Trash Compactor Rental Cost	New Annual Haul Cost for Trash (based on optimal 6 tons/haul x \$110)	Annual Haul Cost for Recyclables (based on optimal 10 tons/haul x \$125) *	Annual Rental Cost of Recyclables Compactor *	Revenue from Sale of Recyclables *	Total Annual Cost with Recycling
Terminal E - Gate 8	297.5	297.5	\$23,800	\$2,820	\$5,454	\$3,719	\$2,700	\$7,438	\$31,055
Terminal D	241.5	241.5	\$19,320	\$2,820	\$4,428	\$3,019	\$2,700	\$6,038	\$26,249
<b>Total:</b>									<b>\$57,304</b>

**Total savings by recycling mixed paper and cardboard: \$63,176**

\* Quote from Northeast Resource Recovery Association, January 16, 2004

The costs listed above do not include the costs for purchasing recycling containers, printing educational recycling flyers and posters, and a \$175 NRRA Government Agency annual membership fee.

- One Harborside Drive – The Office Center**

BP Trucking provides a 30 cy dome top roll off container at the loading dock for white paper recycling at the Office Center at One Harborside Drive. Building custodians bring the white office paper to this container. Some desk side recycling containers exist at the Office Center, but more should be placed in strategic locations where recyclable paper and cardboard are generated.

The program currently costs MassPort \$2,040 per year and captures only a small fraction of the recyclable paper from the Office Center. Only 10.44 tons of paper were recycled from the Office Center from November 2002 through April 2003, which appears very low for this type of office complex.

WasteCap recommends that MassPort negotiate an arrangement with NRRA and the vendor providing the recycling services at Terminals E & D detailed above for “Anything That Rips” recycling services at

the Office Center. MassPort should be able to leverage a much more cost effective price for this service when combined with the terminal recycling services.

#### **Additional recommendations for the Office Center:**

**1. Place desk side recycling bins at each workstation**

MassPort currently has provided recycling bins at workstations in the Office Center. Providing desk side recycling containers (usually 14 quart blue bins) within arm's reach of each workstation will dramatically improve paper recycling rates. Desk side recycling bins are convenient – and convenience is the key to a successful recycling program. MassPort staff should tour the Office Center to ensure that each employee has a desk side recycling bin, and that additional bins are strategically placed at paper and cardboard generation areas. These paper and cardboard recycling containers are critical to the success of the program because approximately 80% of typical office waste is recyclable paper and cardboard.

Be sure to include an educational recycling flyer with each bin.

**2. Place larger paper recycling bins at high generation areas**

Place 23 gallon Slim Jim containers with slotted tops manufactured by Rubbermaid (or equal) in areas such as the copy rooms, computer centers, and mailrooms where significant quantities of paper are generated. Recycling guidelines and trashcans should be placed in these areas to minimize contamination. *(See Appendix 2, which provides information about "Slim Jim" containers.)*

**3. Add additional recycling bins if needed**

Monitor how full the recycling containers are before each time they are emptied. A tracking sheet will help you gauge the amount of times the containers actually need to be emptied. Add more bins where needed.

**4. Collect recyclables from workstations on Tuesdays and Thursdays**

MassPort does not need to increase their workforce to implement an office paper recycling program and increase recycling rates. Instead of collecting trash every day, direct custodial staff to remove trash from offices three days a week and recyclables from offices twice a week. For example, use Monday, Wednesday, and Friday as trash pickup days and Tuesdays and Thursdays for recyclables pickups. Trash in bathrooms and other public spaces can still be collected daily.

- **Fire Station**

All trash from the Fire Station is currently disposed of in a sealed 6 cy compacting dumpster. MassPort should perform a waste audit on this trash to determine if there is a large % of paper and cardboard in this trash. If so, WasteCap recommends that MassPort negotiate an arrangement with NRRA and the vendor providing the recycling services at Terminals E & D detailed above for "Anything That Rips" recycling services at the Fire Station. MassPort should be able to leverage a much more cost effective price for this service when combined with the terminal recycling services.

Trash compactor at the Fire Station



- **Cardboard Recycling Compactor at the Open Dump Area**

MassPort is being charged \$3,120 annually for this compactor and not receiving any revenue for the recycled cardboard. WasteCap recommends that MassPort negotiate an arrangement with NRRA and the vendor providing the recycling services at Terminals E & D detailed above for a cardboard recycling stationary compactor and 42 cy roll-off container at the Open Dump Area. MassPort should be able to leverage a much more cost effective price for this service (which includes revenue from

The cardboard compactor at the Open Dump Area



the sale of the recyclable cardboard) when combined with the terminal recycling services.

Important note: The implementation of this program must be accompanied by a comprehensive recycling education program for MassPort staff and other vendors who use this compactor to prevent contamination and avoid additional waste disposal charges.

#### **General Paper Recycling Tips:**

- Office paper usually comprises greater than 80% of office trash, so make your recycling program as or more convenient than the trash collection program.
- Recycle as many types of office paper as possible - the market for mixed office paper is good and is expected to remain so into the foreseeable future. Work with your vendor to include colored and white paper, newspapers, magazines, junk mail, envelopes, and post-it notes in your program
- Provide color-coded, clearly labeled recycling containers (usually 14 quart blue bins), within arm's reach of every desk, workstation, classroom, and conference room.
- Post clear and concise recycling guidelines adjacent to all recycling containers and on your company's website.
- Consider purchasing wheeled recycling carts (64 gallon carts work well) for bulk collection of recyclable paper rather than leasing them from vendors. The payback period is short and they are a good investment. Be sure to purchase containers that are compatible with your recycling vendor's equipment.
- Work closely with your recycling vendor regarding which materials are accepted and prohibited.
- Obtain service and price quotes from other vendors on an annual basis to ensure you are recycling as many materials as possible at the best rates available.
- Include a recycling manager's name and contact information on all posters, recycling containers, and program information.
- Recycling office paper reduces your environmental liability because recyclable paper is prohibited from disposal in landfills and incinerators through the Massachusetts Waste Ban regulations (visit <http://www.state.ma.us/dep/recycle/files/wstban01.doc> )
- **Remember - recycling more paper enables you to avoid trash disposal costs and helps you save \$\$.**

#### **General Cardboard Recycling Tips:**

- Recycle cardboard whenever possible - recycling costs less than throwing it away, and cardboard takes up a significant amount of space in your trash dumpster.
- Insist that your vendor clearly labels your dumpsters and compactors "Recycled Cardboard Only".
- To minimize the number of pickups or hauls required, maximize the size of the cardboard dumpster or compactor used and encourage staff to flatten cardboard.
- Explore the possibility of changing your contract from an automatic pickup contract (e.g. 2 times/week) to an "on-call" contract where your staff calls for a pickup or haul only when the cardboard recycling container is full.
- If you are using a compactor, make sure the vendor installs a pressure gauge and provides you with the maximum pressure level allowed. Call for a haul only when the pressure is at or near this level, minimizing the number of hauls required.



- Recycling cardboard reduces your environmental liability because cardboard is prohibited from disposal in landfills and incinerators through the Massachusetts Waste Ban regulations (visit <http://www.state.ma.us/dep/recycle/files/wstban01.doc>).
- If you are using a dumpster, insist that your vendor provides one that is lockable and is equipped with a slot. These features will ensure the cardboard is flattened and contamination is kept to a minimum
- Obtain service and price quotes from other vendors on an annual basis to ensure you are recycling as many materials as possible at the best rates available
- **Remember - Recycling cardboard enables you to avoid trash disposal costs and helps you save \$\$.**

## C. Recycling Bottles and Cans

### Current Bottle & Can Recycling Program:

MassPort does not currently recycle bottles and cans.

### Specific Recommendations:

- **Eliminate the green bottle and can recycling roll-off container at Terminal E, Gate 8.**  
This roll-off container was not located at Terminal E, Gate 8. WasteCap believes that it was probably the green domed 35 cy roll-off container found at South Cargo containing old newspapers dated 2002 and wine bottles in boxes covered in dust. It appeared as though this container had not been used for over a year. Eliminating this roll-off container will save \$720 annually.
- **Eliminate the green bottle and can recycling roll-off container at South Cargo.**  
This roll-off container found at South Cargo contained old newspapers dated 2001, mixed paper, bottles, and cans covered in dust. This container had not been used for a long time. Eliminating this roll-off container will save \$720 annually.
- **Eliminate the green bottle and can, paper, and newspaper recycling roll-off container at the Open Dump Area.**  
This roll-off container found at the Open Dump Area contained an empty section for bottles and cans, and sections for paper and newspaper which were severely contaminated. This container is not being used properly and should be removed. MassPort should instead focus on establishing the “Anything That Rips” paper and cardboard recycling programs in the Terminals and the Office Center detailed in this report. Eliminating this roll-off container will save \$720 annually.
- **Consider bottle and can recycling a long-term goal.**  
Because bottles and cans do not make up a significant portion of the MassPort’s waste stream, the following recommendations should be used in long-term planning. WasteCap recommends focusing on implementing and fine tuning the paper and cardboard recycling programs first.

The two unused recycling roll-off containers at South Cargo



Contamination in the Open Dump Area Recycling Roll-off Container



- **Establish a bottle and can recycling program, especially in the Terminals and Office Center.**

Plastic, glass, tin, and aluminum bottles and cans occupy a significant amount of volume in trash dumpsters and compactors, especially at companies housing cafeterias and other food services operations, so recycling them helps reduce trash disposal costs. It is estimated that bottles and cans may account for 2% by weight (more by volume) of your waste stream, and possibly more at the Terminals.

- Recycling these bottles and cans reduces your environmental liability because these materials are prohibited from disposal in landfills and incinerators through the Massachusetts Waste Ban regulations (visit <http://www.state.ma.us/dep/recycle/files/wstban01.doc>).



### **General Bottle and Can Recycling Tips:**

- Consider purchasing wheeled recycling carts (96 gallon carts work well) for bulk collection of recyclable bottles and cans rather than leasing them from vendors. The payback period is short and they are a good investment. Be sure to purchase containers that are compatible with your recycling vendor's equipment.
- Search for a vendor that recycles co-mingled (mixed) plastic, glass, tin, and aluminum containers. This method is far easier than recycling the various materials separately.
- Work closely with your recycling vendor to determine which materials are accepted and prohibited.
- Obtain service and price quotes from other state contract vendors on an annual basis to ensure you are recycling as many materials as possible at the best rates available.
- Post clear and concise recycling guidelines adjacent to all recycling containers and on your company's website.
- Include a recycling manager's name and contact information on all posters, recycling containers, and program information.
- **Remember - recycling bottles and cans enables you to avoid trash disposal costs and helps you save \$\$.**

## D. Recycling Scrap Metal

### Current Scrap Metal Program:

Details about MassPort's scrap metal recycling program were vague. Jenna Newcombe stated that some scrap metal is recycled at the Facilities Buildings.

### Specific Recommendations:

- **Establish a comprehensive scrap metal recycling program.**

There are opportunities at MassPort to recycle scrap metal. A significant amount of mixed recyclable scrap metal is generated in the vehicle repair and machine shops consisting of iron, steel, copper, aluminum, brass, and other metals. This mix is usually best recycled as "mixed light and heavy iron and steel".

WasteCap recommends that MassPort contact the NRRA to obtain quotes for recycling scrap metal. These programs are currently generating revenue for the scrap metal generators.

View WasteCap's Recycling Services Directory (RSD) online at [www.wastecap.org](http://www.wastecap.org) to find detailed information about other scrap metal recyclers in the area. The RSD lists companies that accept, collect, and purchase materials for recycling from businesses.



Recycling scrap metal like this will generate revenue and decrease trash disposal costs.



## **WASTE REDUCTION EDUCATION**

Public education is critical to the success of your program. If this aspect of the program is not implemented, the recycling program will not reach its full potential. The best way to ensure a successful program is to educate the staff by explaining what is recyclable, where it can be recycled, why it is important to recycle, and who can answer questions about the recycling program.

### **Signage**

Occupants must see clear, visible signs promoting the recycling program. Signs should be placed in high visibility areas such as bulletin boards, on or near recycling bins, near copy machines, in cafeterias (tri-fold table tents work well), and on the web (see the "Website" section below for details).

List what can be recycled and where it can be placed. Be sure to leave contact information for participants to ask questions or to report a problem. Information explaining your recycling program should also be included as part of the orientation for new employees.

To avoid contamination make sure all recycling bins and dumpsters are properly labeled.

### **Recycling Coordinators (Green Team)**

Establish a network of volunteer recycling coordinators from each department or building. These networks have been proven to increase recycle rates and reduce costs. Many organizations have found that employees provide creative ideas to improve waste-handling practices. Management can make them feel comfortable and encourage them to come forward with ideas through the use of these networks.

By creating a network of coordinators you will develop a sense of program "ownership". These people will become your liaisons for distributing educational materials, and assist in the enforcement of their recycling programs.

Include representatives from the custodial work force in the network - you will find that many custodial staff take pride in the recycling efforts. They are also the people that deal with the program first-hand and probably know its strengths and weaknesses better than anyone.

Meet with the coordinators two to four times a year to discuss your recycling program. Use these meetings to share ideas to improve, expand, and sustain the program. Provide food at the meetings! It really helps increase attendance and participation.

### **Website**

Create a section on your company website that outlines the recycling program. This section should contain guidelines and statistics that inform your staff and visitors about materials that can be recycled, where they should be placed, updates, statistics, and who to contact if they have questions about your recycling program.

By establishing a recycling section on your website, you will be providing an updateable resource for staff to print out anytime. The Web is also a great way to show visitors and the local community that your company is doing its part to improve the environment.

The address of your Website recycling section should be included on all recycling program educational materials.

### **Kick-off Memo**

A letter signed by upper management and sent to company staff highlighting the benefits of the recycling program is an excellent way to jumpstart and enhance your program.

## **Reinforcement and Follow-up**

It is important to reinforce the new recycling culture in your company. Keep employees informed of your company's recycling efforts by highlighting recycled products purchased, participation rates, quantities of recycled material collected, revenue earned, disposal cost savings, and any problems encountered and/or solved in company memos or newsletters. Continuously seek suggestions for improving your program from your staff.

## **Join the US EPA WasteWise Program**

WasteWise is a free, voluntary, US Environmental Protection Agency (EPA) program through which organizations eliminate costly solid waste, benefiting their bottom line and the environment. Members set feasible and cost-effective waste management goals for their organization.

WasteWise provides free technical assistance to help your company develop, implement, and measure waste reduction activities. WasteWise offers publicity for organizations that are successful in reducing waste through EPA publications, case studies, and national and regional events. These events also provide networking opportunities for organizations to share waste reduction ideas and success stories.

*(See Appendix 3 for more information.)*

## **TRACKING RECYCLING STATISTICS**

It is important to track your recycling and trash statistics on a regular basis. Maintaining accurate and consistent records including the types and quantities of materials recycled and disposed of in your program provides the basis for making informed decisions about future program modifications and enhancements.

- **Gauge Program Progress**

Tracking your waste reduction efforts will provide a consistent means to accurately measure and track the program progress over time and most importantly, it will help determine if your program is cost effective.

- **Address Waste Reduction Goals**

Accurately tracking your waste and recycling percentages will give MassPort the knowledge needed to set firm waste reduction goals.

- **Educate the Staff**

Information gathered from measuring and tracking recyclables and trash quantities is very valuable in educating your staff about the positive impacts of your program and sustaining the program.

### **Tracking Methods**

The best way to track your recycling program's progress is to develop an electronic spreadsheet based on a monthly timeline which compares this year's recycling and trash totals to the previous year's totals. You can obtain this data from your trash and recycling service providers, and the information you need is often provided on monthly vendor invoices. Sample spreadsheet formats are provided below:

### **Z Corp Recycling Statistics**

Commodity	Tons Generated									
	January		February		March		...	Year to Date Totals		
	FY03	FY04	FY03	FY04	FY03	FY04		FY03	FY04	% Change
Mixed paper										
Cardboard										
Bottles and Cans										
Scrap metal										
Total recyclables										
Trash										
Total recyclables and trash										

Commodity	Cost/Revenue									
	January		February		March			Year to Date Totals		
	FY03	FY04	FY03	FY04	FY03	FY04	...	FY03	FY04	% Change
Mixed paper										
Cardboard										
Bottles and Cans										
Scrap metal										
Total recyclables										
Trash										
Total recyclables and trash										

## **RESTRUCTURING EXISTING CONTRACTS**

There are many ways to restructure your existing contract and reduce your waste disposal costs. Two methods are reviewed in this section.

### **Analyzing the number of Pulls or Dumps Required**

Many times dumpsters or roll off containers are emptied too frequently, resulting high trash disposal and recycling costs. You should monitor the how full the recycling and trash containers are immediately before each time they are emptied. Create a weekly spreadsheet, which includes inspection times (the day that the dumpster or roll off container is to be emptied), as well as boxes indicating how full the container is at the time of inspection. You can use simple terminology such as “empty”, “1/4 full”, “full”, etc. By reviewing this tracking sheet over time, it will help you gauge the amount of times the container actually needs to be emptied. You may discover that the container needs to be emptied much less often —and that will translate into cost savings.

Example:

	% full on recycling or disposal day					Average % of total volume full/week
	Mon	Tue	Wed	Thu	Fri	
Date	10/6	10/7	10/8	10/9	10/10	
Dumpster, Building A - Mixed office paper ( 5 x week)	25%	25%	50%	25%	25%	30%
Roll off Building B – Trash ( 3 x week)	50%		50%		100%	67%

### **Resource Management**

One method the Massachusetts Department of Environmental Protection recommends for contracting for waste management services is called resource management. Unlike traditional solid waste service contracts, resource management (RM) compensates waste contractors based on performance in achieving your organization's waste reduction goals rather than the volume of waste disposed. As a result, RM aligns waste contractor incentives with your own goals as you both explore innovative approaches that foster cost-effective resource efficiency through prevention, recycling, and recovery.

Coined by General Motors Corporation (GM), RM was a logical outgrowth to its success with performance-based contracting in the area of chemical purchasing, use, and management. GM adopted RM in response to an internal waste reduction goal and the recognition that existing hauling and disposal contracts limited waste reduction efforts across its more than 70 North American facilities. GM's objective in executing RM contracts was to "provide a systems approach to resource efficiency that motivates cost reduction and conservation of plant resources."

Research to date demonstrates that RM is widely applicable in business, institutional, and municipal settings. Because many organizations rely on disposal contracts and some already use performance-based contracting practices, RM might be a useful model for your organization.

For more information about RM, please visit the Massachusetts DEP's RM web site at <http://www.state.ma.us/dep/recycle/files/rm/rmcontr.htm>.